AMENDMENTS TO THE CLAIMS:

This listing of the claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1 – 24 (Canceled)

25.   (Previously Presented) A method of performing a coarse frequency synchronization compensation for a carrier frequency deviation from an oscillator frequency in a demodulation system capable of demodulating a signal having a frame structure, said frame structure comprising at least one useful symbol and a reference symbol, said reference symbol being an amplitude-modulated bit sequence which comprises two identical sequences, said method comprising the steps of:

receiving said signal;

down-converting said received signal;

performing an amplitude-demodulation of the down-converted signal in order to generate an envelope, said envelope having two portions which are based on said identical sequences;

correlating one of said portions of said envelope with another one of said portions in order to determine said carrier frequency deviation; and

controlling said oscillator frequency based on said carrier frequency deviation:

wherein said correlating step further comprises weighting of corresponding values of said two portions with corresponding values of said two sequences.

26.   (Canceled)

27.   (Canceled)

-4-

28.   (Previously Presented)   The method of claim 25, wherein said carrier frequency deviation is determined as follows:

$$\Delta f = \frac{1}{2\pi \frac{L}{2} T_{MCM}} \arg\left(\sum_{k=1}^{\frac{L}{2}} \left[\tilde{r}\left(k + \frac{L}{2}\right) \cdot \tilde{r}^*(k) \right] \cdot \left[S_{AM}(k) S_{AM}^*\left(k + \frac{L}{2}\right) \right] \right)$$

wherein $\tilde{r}$ designates values of said portions;

$\tilde{r}^*$ designates the complex conjugate of said values of said portions;

T_{MCM} designates the duration of said useful symbol;

k designates an index;

L designates the number of values of said two sequences of said reference symbol;

S_{AM} designates values of said identical sequences; and

S_{AM}^* designates the complex conjugate of said values of said identical sequences.

29.   (Previously Presented)   The method according to claim 25, wherein said signal is an orthogonal frequency division multiplex signal.

30.   (Previously Presented)   The method according to claim 25, further comprising the step of performing a fast automatic gain control of said received down-converted signal prior to the step of performing said amplitude-demodulation.

31. (Previously Presented) The method according to claim 25, wherein the step of performing said amplitude-demodulation comprises the step of calculating an amplitude of said signal using the $alpha_{max+}$ $beta_{min-}$ method.

32. (Previously Presented) The method according to claim 25, further comprising the steps of sampling respective amplitudes of said received down-converted signal and comparing said sampled amplitudes with a predetermined threshold in order to generate a bit sequence in order to perform said amplitude-demodulation.

33. (Original) The method according to claim 32, wherein the step of sampling respective amplitudes of said received down-converted signal further comprises the step of performing an over-sampling of said received down-converted signal.

34. (Canceled)

35. (Canceled)

36. (Currently Amended) An apparatus for performing a coarse frequency synchronization compensation for a carrier frequency deviation from an oscillator frequency, for a demodulation system capable of demodulating a signal having a frame structure, said frame structure comprising at least one useful symbol and a reference symbol, said reference symbol being an amplitude-modulated bit sequence which comprises two identical sequences, said apparatus comprising:

receiving means for receiving said signal;

a down-converter for down-converting said received signal;

an amplitude-demodulator for performing an amplitude-demodulation of said down-converted signal in order to generate an envelope, said envelope having two portions which are based on said identical sequences;

a correlator for correlating one of said portions of said envelope with another one of said portions in order to determine said carrier frequency deviation; and

means for controlling said oscillator frequency based on said carrier frequency deviation;

wherein said correlator comprises means for weighting of corresponding values of said two portions with corresponding values of said two sequences.

37. (Canceled)

38. (Canceled)

39. (Currently Amended) The apparatus of claim 36, further comprising means for determining said carrier frequency deviation as follows:

$$\Delta f = \frac{1}{2\pi \frac{L}{2} T_{MCM}} \arg\left(\sum_{k=1}^{\frac{L}{2}} \left[\tilde{r}\left(k + \frac{L}{2}\right) \cdot \tilde{r}^*(k) \right] \cdot \left[S_{AM}(k) S_{AM}^*\left(k + \frac{L}{2}\right) \right] \right)$$

wherein $\tilde{r}$ designates values of said portions;

$\tilde{r}^*$ designates the complex conjugate of said values of said portions;

T_{MCM} designates the duration of said useful symbol;

k designates an index;

L designates the number of values of said two sequences of said reference symbol;

S_{AM} designates values of said identical sequences; and

S_{AM}^{*} designates the complex conjugate of said values of said identical sequences.

40.   (Previously Presented) The apparatus according to claim 36, wherein said signal is an orthogonal frequency division multiplexed signal.

41.   (Previously Presented) The apparatus according to claim 36, further comprising means for performing a fast automatic gain control of said received down-converted signal preceding said amplitude-demodulator.

42.   (Currently Amended) The apparatus according to claim 36, wherein said amplitude-demodulator comprises means for calculating an amplitude of said signal using ~~the~~an alpha$_{max}$+ beta$_{min}$- method.

43.   (Currently Amended) The apparatus according to claim 36, further comprising means for sampling respective amplitudes of said ~~received~~ down-converted signal, wherein said amplitude-demodulator comprises means for comparing said sampled amplitudes with a predetermined threshold in order to generate a bit sequence.

44.   (Currently Amended) The apparatus according to claim 43, wherein said means for sampling comprises means for over-sampling said ~~received~~ down-converted signal.